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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/911,036	07/23/2001	Joseph B. Kejha	JBK -10	3738

7590 04/29/2005

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EXAMINER

AUSTIN, MELISSA J

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 04/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/911,036

Applicant(s)

KEJHA ET AL.

Examiner

Melissa Austin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-27 is/are rejected.
- 7) ☒ Claim(s) 14 and 24-27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 17 February 2005 has been entered.

Claims 5-27 are pending in this application.

Information Disclosure Statement

2. The Information Disclosure Statement (IDS) filed on 23 July 2001 has been considered by the examiner.

Claim Objections

3. Claims 24-27 are objected to because of the following informalities: "dip-coated by an active material slurry" should be changed to "dip-coated **with** an active material slurry". Appropriate correction is required.

4. Claim 14 is objected to because of the following informalities: "dip-coated by said primer" should be changed to "dip-coated **with** said primer". Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 24-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims have limitations directed toward both a method and an apparatus. The limitations in lines 5-8

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of the claims define the apparatus, and are not further limiting to the method. It is unclear whether the method includes steps of controlling the speed and/or winding the length onto a spool.

7. Claims dependent from claims rejected under 35 USC 112, first and/or second paragraph are also rejected for the same.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 24-27 and 15-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Kejha (US Patent 5,443,602). Kejha discloses a method for coating a current collector with cathode material. (Col. 2, ll. 5-7). As shown in Fig. 4, a web (11), which may be a "desired current collector," travels into a dip tank (37) and vertically upward through a solidification chamber (43). (Col. 3, ll. 50-55; Col. 4, ll. 46-56). Kejha teaches that the current collectors described in US Patent Application serial number 08/281,011 may be used in the Patent 5,443,602 invention. (See US Patent 5,750,289, child of application 08/281,011, Col. 3, ll. 48-56). The metal grids, expanded metal foils, perforated metal foils, and solid metal foils recited in instant claims 1-4 are encompassed by the current collectors disclosed in US Patent application serial number 08/281,011. As disclosed by applicants, these current collectors include two or three layers of different materials including a plastic film or net layer, and one or two metal layers on the surface of the plastic. Thus, the current collectors disclosed in US Patent Application serial number 08/281,011 include a metal layer, which would be in the form of metal grid, expanded metal foil, perforated metal foil, or solid metal foil.

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Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 5-8, 10, 11, 19, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Kejha (US Patent 5,443,602) in view of Andersen et al. (US Patent 6,280,879). As discussed above, Kejha discloses the elements of claims 24-27 and 15-18, as discussed above and incorporated herein. Kejha also teaches attaching masking tape to the current collector for attachment of terminals prior to further processing of the collector. (Col. 3, ll. 45 - Col. 4, ll. 30). However, Kejha does not disclose application of a primer material to a current collector prior to dip-coating the current collector.

With regard to claims 5, 6, 10, 11-13 19, 21, and 22, Andersen teaches that current collector foils can be protected from highly reactive and corrosive electrode and electrolyte materials by coating the current collectors with primer. The primer is composed of carbon black, a binder (PVDF or PVDF copolymers), and solvent (multiple solvents used in Examples II and III). It was shown that the primer resulted in good adhesion. (Col. 5, ll. 27 – Col. 6, ll. 23 ; Col. 14, ll. 14-16). One of ordinary skill in the art at the time the invention was made would have known Thus, it would have been obvious to one of ordinary skill in the art to use the primer disclosed by Andersen et al. in the process disclosed in by Kejha in order to protect current collectors from reactive and corrosive materials and promote good adhesion.

With regard to claims 7, 8, 21, and 22, Andersen teaches an electrode paste having solvent in the range of 20-88% by weight, binder in the range of 1-10% by weight, active material in the range of 25-50% by weight, and carbon black as a conductive additive in the range of 2-10% by weight. PVDF is a preferred binder, and ketones, which include acetone, and N-methyl-pyrrolidone are preferred solvents. (Col. 7, ll. 17-65). Adjustment of the boiling point/evaporation rate of the solvent and the viscosity of the

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solvent are taught as critical, and thus it would have been obvious to one of ordinary skill in the art to use a combination of solvents to adjust vapor pressure, etc.

12. Claims 9, 14, 20, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Kejha (US Patent 5,443,602) in view of Andersen et al. (US Patent 6,280,879), and further in view of Werner (U.S. Patent No. 3,694,392). Kejha and Anderson teach the elements of claims 5 and 6 as discussed above and incorporated herein. However, neither reference discloses a primer containing lithium polysilicate. Werner teaches a primer for increasing adhesion of a fluorocarbon polymer coating to a substrate. This primer contains lithium polysilicate, carbon black and water. (Col. 1, ll. 42-48, Example 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a primer containing lithium polysilicate, carbon black, and water as disclosed by Werner in the process disclosed by Kejha and Andersen et al. in order to increase adhesion of the dip-coated slurry to the current collector.

13. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Kejha (US Patent 5,443,602) in view of Andersen et al. (US Patent 6,280,879), and further in view of Iwanaga et al. (U.S. Patent No. 5,385,761). Kejha and Andersen teach the elements of claims 24-27; however, neither reference teaches an electrode cleaning step. Iwanaga teaches sandblasting to remove the mask after the electrode has been coated. (Col. 8, ll. 42-44). One of ordinary skill in the art would recognize that any abrading or polishing would remove the mask and any oxides that may have formed on the masked portion of the collector and would leave behind detritus. This detritus would adversely affect the joining of the current collector and terminal tab, thus requiring removal. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include an electrode cleaning step to remove the mask as taught by Iwanaga in the process as disclosed by Kejha and Andersen et al. in order to remove the mask and any oxides that may have formed so that good physical and electrical connections may be made.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Austin whose telephone number is (571) 272-1247. The examiner can normally be reached on Monday - Thursday, alt. Friday, 7:15 AM - 4:15 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mja
Melissa Austin
Patent Examiner
Art Unit 1745


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